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unjust did he not accord due praise in these directions. It is only in Mr. Fowke's attitude toward others, in which there is manifest such a spirit of intolerance, that he is open to severe criticism.

His conclusions are that several tribes may have occupied Ohio (p. 470), yet he does not agree with the 'long and short heads' theory.

He uses the terms 'tribe' and 'race' interchangeably throughout his book. He says mound finds and surface finds differ little—a statement not borne out by field testimony. Different sites present varying degrees of culture, and the Turner site where Putnam found so many evidences of a considerable advance in art, and the Hopewell where substances from the Yellowstone, the Gulf and other distinct points, together with beautiful carvings in stone and bone, were exhumed, are classed with sites which evince a very low degree of culture.

No sensible person believes in 'civilization of the Mound-builders' or that there was a 'race of Mound-builders.' But to swing to the other extreme and classify a tribe able to construct the strange 'combination-works' of the Lower Scioto with the Pai Utes or the Comanches is manifestly wrong.

WARREN K. MOOREHEAD.

ANDOVER, MASS.

The Minerals and Mineral Localities of Texas.

By FREDERIC W. SIMONDS, Ph.D., Professor of Geology, the University of Texas. Bulletin No. 5, The University of Texas Mineral Survey, December, 1902. Pp. 104.

In the 'Letter of Transmittal' Dr. Wm. B. Phillips, director of the survey, says: "In view of the deep interest now being shown in the mineral resources of the state, we thought it advisable to issue a special publication dealing with the mineral and mineral localities. Dr. Simonds has been engaged upon this work for some time, and it is believed that the list he now presents covers the entire field as well as it can be done at present."

The task Dr. Simonds set for himself was a very arduous one, and it is to his credit that the list 'covers the entire field as well as can be done at present.' It is by far the most com-

prehensive, and at the same time authentic, list of the minerals and mineral localities of Texas that has been published, and Dr. Simonds has done the state a real service in putting in accessible form so much valuable information concerning these particular resources of the state.

The minerals are listed alphabetically, with numerous cross-references, and this list covers eighty-four pages of the bulletin. Next follows 'A Summary of the Minerals of Texas by Counties'; then notes on the scale of hardness, specific gravity, streak, luster, fracture; and the bulletin closes with a discussion of 'The Commercial Aspects of Certain Ores in Trans-Pecos, Texas,' by Dr. Wm. B. Phillips, Director of the Survey.

The work is well done, and is worthy of better treatment than it received at the hands of the printer. The poor quality of the paper used and the numerous typographical errors—errors solely attributable to gross negligence on the part of the printer—must be a disappointment to the author. The neglect of the printer to follow 'copy' with regard to proper spacing in a large number of the chemical formulæ is very reprehensible. On page 72 the omission of the letter 'y' in the word pyroxene is inexcusably bad in a list alphabetically arranged, but the insertion, on page 94, of the word 'pounds' instead of the word 'points' under the scale of hardness, is infinitely worse.

H. W. HARPER.

February 23, 1903.

SCIENTIFIC JOURNALS AND ARTICLES.

THE March number of the *Botanical Gazette* opens with a contribution from the Cryptogamic Laboratory of Harvard University by Dr. Roland Thaxter, entitled, 'New or Peculiar North American Hyphomycetes.' In this, the third paper of the series, he describes two new genera, containing three species, *Heterocephalum aurantiacum*, *Cephalophora tropica* and *Cephalophora irregularis*, illustrated by two lithograph plates.—In the conclusion of his paper on 'Chemical Stimulation and the Evolution of Carbon Dioxid,' Dr. Edwin B. Copeland shows that metallic poisons drive off CO₂ from the carbonates in

the cell sap of water plants, such as *Elodea* and *Ceratophyllum*. This pseudo-respiration under the action of strong poisons is many times as active as the real respiration and makes the study of the latter impossible. Carbon dioxid is also given off from filtered sap expressed from *Elodea* more rapidly than from the living plant. He also finds that the evolution of CO₂ is a feature of the breaking down of protoplasm into mere proteid in death, and that it continues for a considerable time after death.—Professor John M. Coulter and Dr. Charles J. Chamberlain discuss the 'Embryogeny of *Zamia*.' The results of that study, taken in connection with previous work, enable them to arrange the gymnosperms in a developmental series. It appears that the embryogeny of *Ginkgo* is the most primitive among gymnosperms, that of *Cycas* more primitive than that of *Zamia*, while *Zamia* approaches more nearly the Coniferales; that such forms as *Taxus*, *Cephalotaxus*, *Podocarpus*, *Taxodium* and *Thuja* show progressive stages from the embryogeny of *Zamia* toward that of *Pinus*; that *Ephedra* has the most primitive embryogeny among the Gnetales; and that *Gnetum* and *Tumboa* resemble the angiosperms in the elimination of free nuclear division from their embryogeny.—Professor Bruce Fink describes some *Cladonia* formations occurring on the talus of cliffs in northeastern Minnesota. The region is a remarkable one for the growth of these interesting lichens. Photographic illustrations show the way in which the talus blocks are gradually covered with lichen societies.—Mr. Howard S. Reed describes 'The Development of the Macrosporangium of *Yucca filamentosa*,' which shows certain interesting deviations from the mode in other Liliaceæ.—Mr. J. M. Greenman remarks that his new genus *Faxonanthus*, recently described in Sargent's 'Trees and Shrubs,' accidentally without indication of relationship, belongs to the family Scrophulariaceæ, and is allied to the genus *Leucophyllum*.—Mr. A. S. Hitchcock publishes nomenclatural notes upon *Andropogon divaricatum* and *Dactylis cynosuroides*. Küster's

'Pathologische Pflanzenanatomie,' Strasburger's 'Das botanische Practicum,' and Wiesner's 'Die Rohstoffe des Pflanzenreiches' are reviewed, together with a large number of papers in current literature.

The Popular Science Monthly for April opens with a translation of Hugo de Vries' memoir, 'On the Origin of Species.' This is followed by the ninth instalment of 'Mental and Moral Heredity in Royalty,' by Frederick A. Woods, who states that heredity appears to have exercised in mental life a factor not far from nine tenths, while on the moral side it is something over one half. Under the title 'The Great Auk in Art,' Frank Bond gives a considerable series of pictures of this bird gathered from various sources, accompanied by the descriptions of different authors. T. D. A. Cockerell discusses 'The Making of Biologists,' presenting evidence to show that much depends on natural bent and out-of-door surroundings, and Glenn W. Herrick considers 'The Relation of Malaria to Agriculture and Other Industries of the South.' He shows that malaria increases the death rate and that the loss of time it causes is a very serious drawback to agricultural prosperity. Albert M. Reese has an interesting article on 'The Habits of the Giant Salamander,' though the animal referred to is the North American *Cryptobranchus* and not, as one would naturally suppose, the really giant Japanese species. J. Howard Gore has a paper on 'The Carnegie Institution and the National University,' and in 'Biography in the Schools' David R. Major and T. H. Haines present facts implying a decided lack of biographical knowledge on the part of the average student. Charles A. White describes 'A Visit to the Quarry Caves of Jerusalem,' and Sir Benjamin Baker the construction of 'The Nile Dams and Reservoir.' 'The Progress of Science' contains various items of general interest and the index to Vol. LXII. completes the number.

The Museums Journal of Great Britain has an article on 'Voluntary Help in Museums,' suggesting that a museum might obtain much assistance from parties not on its staff, but

interested in its welfare. Ernest Lowe, of the Plymouth Museum, describes 'The Registration and Numeration of Museum Specimens' as practiced in that institution and the editor invites other papers on that subject. 'An Outsider's View of Museums and the Public' suggests that the latter does not appreciate the instruction to be found in museums. The balance of the number is filled with notes regarding British and foreign museums.

The Plant World for March contains the fourth instalment of 'Notes from the Note Book of a Naturalist in Guam,' by William E. Safford; 'Another Use for the Royal Palm,' by William Palmer; 'Spontaneous Fission of Olive Trees in Palestine,' by Charles A. White, and 'Botanizing in a Cactus Bed,' by Charles F. Saunders.

IN the *Proceedings of the American Academy of Arts and Sciences* W. E. Castle gives a very clear exposition of the main features of 'Mendel's Law of Heredity,' accompanied by illustrations of its workings. It is only to be regretted that this useful paper is not published where it would be more generally accessible to the many who wish to know just what Mendel's law is, but do not care to spend the time to look up articles relating to it.

NUMBER 9 of Volume V. of the *Memoirs of the Boston Society of Natural History* is devoted to a detailed description of 'The Skeletal System of *Necturus maculatus*,' by Harris H. Wilder. This is accompanied by several plates which admirably illustrate the features of the skeleton. The author hopes that as occasion offers he may add to this papers on other systems of *Necturus* and thus give a complete monograph of a typical tailed amphibian.

SOCIETIES AND ACADEMIES.

AMERICAN PHYSICAL SOCIETY.

THE regular winter meeting of the Physical Society was held at Columbia University, New York city, on February 28, 1903.

In a paper on the 'Nucleation of the Atmosphere During Cold Weather,' by Carl Barus,

the author presented the results of recent work with his coronal methods of counting the number of condensation nuclei in the air. These nuclei were found to be present in abnormally large numbers during the very cold weather of December and January. Curves were exhibited showing a remarkable parallelism between fall of temperature and rise of nucleation. Three alternative hypotheses were mentioned by Professor Barus in explanation of the results, viz., a current from the upper air rich in nuclei may be brought down by the cold wave; or the formation of water nuclei may bring down an air stratum overlying cities; or the water nuclei may be radioactive at low temperatures and thus produce other nuclei by ionization. Experiments are in progress to test the latter hypothesis.

A second paper by the same author dealt with the 'Ionization and Nucleation of the Phosphorous Emanation.' The results show that while the ionization produced vanishes very quickly, the coronas due to condensation on the nuclei present last for a relatively long period. In this case, therefore, there appears to be no relation between ionization and nucleation.

Professor Barus also described an interesting and simple 'Method of Determining the Ratio of the Velocities of the Ions in Air,' depending on the rate of dissipation of charge from a point. The value obtained for the ratio of the velocity of the negative ion to that of the positive ion was 1.32, which agrees closely with the values obtained by other methods.

A paper on 'Diffusion and Supersaturation,' by H. W. Morse and G. W. Pierce, described quantitative experiments based upon an experiment originally due to Liesegang. When the end of a capillary tube containing a solution of potassium chromate is dipped into a water solution of silver nitrate, the silver nitrate diffuses up into the tube and throws down a precipitate of silver chromate. The silver chromate, instead of growing continuously as diffusion proceeds, forms in distinct layers widely separated in comparison with the thickness of the layers. Measurements were made of the distances between these layers and the time was observed at which each suc-